COMMONWEALTH OF VIRGINIA

RIPARIAN BUFFER

❖

Implementation Plan

July 1998

VIRGINIA RIPARIAN FOREST BUFFER PANEL

ACKNOWLEDGMENTS

Virginia is grateful to many individuals for their continued support of the Virginia Riparian Buffer Initiative. More than 60 individuals and representatives of interested groups from across Virginia played key roles in developing this plan. They represented a broad range of interests, including natural resource management, agriculture, silviculture, building and land development, and watershed advocacy, among others.

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❖

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TABLE OF CONTENTS

COMMONWEALTH OF VIRGINIA

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❖

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Riparian buffers — areas of trees, shrubs or other vegetation adjacent to streams — play a significant role in conserving living resources. Recognizing these environmental benefits, the multi-jurisdictional Chesapeake Bay Executive Council adopted Directive 94-1 in October 1994. This directive called on the Chesapeake Bay Program to develop a policy on riparian forest buffers. Following a two year effort by a Panel representing many interest groups and experts, the Executive Council adopted several goals and policy recommendations to enhance stewardship of riparian areas. Specifically, the goals call for conserving existing riparian buffers and restoring 2,010 miles of new riparian forest buffers within the Bay watershed by the year 2010. Virginia's commitment is to restore 610 miles of riparian forest buffers in the same time frame.

Thanks to the information and education efforts of many federal and state agency partners and stakeholders, as well as to advances in our scientific understanding of buffer functions, riparian buffers are being recognized for their ecological value and planted across the Commonwealth. We trust this implementation plan will promote further efforts to protect the Chesapeake Bay by conserving and restoring riparian forest and other buffers.

James W. Garner, State Forester, Chair
Virginia Riparian Forest Buffer Panel

The overall goal of the Virginia Riparian Buffer Implementation Plan is to ensure, to the extent feasible, that all streams and shorelines in the Commonwealth will be protected by an adequate riparian buffer. This program will be implemented state-wide. The agencies of the Commonwealth will work with interested organizations, businesses and private landowners to establish, enhance and maintain various kinds of riparian buffers, as appropriate for the setting and use of the land, recognizing that forested buffers are the ideal. The Commonwealth's commitment to restore 610 miles of riparian forested buffers within Virginia's portion of the Chesapeake Bay watershed is an important subset of this overall plan. The following six major objectives and their associated strategies are highlighted in this plan to ensure the overall goal is achieved:

Restore Missing or Inadequate Riparian Buffers

- Identify restoration sites
- Develop local watershed-based plans for specific actions
- Establish education outreach to volunteer groups
- Provide sufficient planting stock
- Plant riparian buffers and provide maintenance information

Conserve Existing Riparian Buffers

- Document riparian forest buffer conservation on State-owned lands and National Forests
- Identify riparian forest buffers in easements held by Land Trusts and Conservancies
- Determine riparian forest buffers in easements due to local government tax breaks
- Determine riparian forest buffers in easements through USDA programs
- Establish education outreach to volunteer groups and individual landowners
- Coordinate goals and priorities with state and local integrated watershed management programs

Enhance Program Coordination and Accountability

- Establish a Virginia Riparian Buffer Work Group
- Obtain an Executive Order addressing riparian buffers on state-owned lands
- Develop Memoranda of Agreements
- Promote private sector involvement
- Designate the Department of Forestry and Soil and Water Conservation Districts as program field contacts who can coordinate buffer planning and funding assistance
- Provide a riparian buffer source book
- Initiate a single tracking system
- Develop a spot-check tracking database
- Establish a program to coordinate and support volunteer activities

Enhance Incentives

- Implement legislation authorizing tax breaks for riparian forest buffer lands
- As applications are submitted, use Water Quality Improvement Fund money to reimburse localities for revenue losses due to riparian buffer land tax breaks
- Seek legislation to exempt riparian forest buffers from estate taxes
- Encourage localities to use stormwater utility fees for establishing riparian buffers
- Seek Conservation Reserve Enhancement Program Funds through the U.S. Department of Agriculture
- Consolidate and improve cost-share and grant programs
- Encourage flexibility in local zoning and subdivision requirements
- Promote expansion of local government land-use management tools
- Seek increased funding for conservation easements through the Open Space Lands Preservation Trust Fund
- Explore small business assistance programs as funding sources
- Establish recognition programs

Promote Education and Outreach

- Initiate a major public relations campaign in concert with the organization *American Forests*
- Promote private sector involvement
- Coordinate with young people's education programs
- Promote activities of local watershed organizations
- Increase demonstration areas in each tributary
- Provide public information through real estate companies and chambers of commerce
- Continue cross-training among participating state and federal agencies
- Link riparian forest buffer restoration data with the Virginia Geographic Information Network

Target, Track and Conduct Research

- Target riparian buffer efforts where the greatest benefits can be achieved for the costs
- Establish a riparian buffer-tracking program
- Develop a system to inventory and track progress
- Pursue riparian buffer research opportunities, including studies to determine the most effective methods of establishing adequate riparian buffers

Careful stewardship of rivers and streams is essential to meeting the goals for restoring the Chesapeake Bay and its tributaries. Riparian buffers play a critical role in the landscape, protecting water quality by filtering runoff and removing nutrients and sediment; protecting living resources by supplying food, habitat and temperature-moderating shade; protecting the shoreline integrity from erosion impacts; and moderating flood damages.

Understanding these environmental benefits, the Chesapeake Bay Program convened a Riparian Forest Buffer Panel in 1994. The multi-jurisdictional panel was charged with developing policy to enhance conservation and restoration of riparian forest buffers in the Bay watershed.

For two years, the 31-member panel, chaired by Virginia State Forester Jim Garner, met regularly and developed goals and recommendations. In November 1996, the Chesapeake Bay Executive Council adopted these goals for member states and federal agencies:

- To assure, to the extent feasible, that all streams and shorelines will be protected by a forested or other riparian buffer
- To conserve and manage existing forests along all streams and shorelines
- To increase the use of all types of riparian buffers and restore riparian forests on 2,010 miles of stream and shoreline in the watershed by 2010, targeting efforts where they will be of greatest value to water quality and living resources

Also, the Executive Council adopted five policy recommendations:

- Enhance program coordination and accountability
- Promote private sector involvement
- Enhance incentives
- Support research, monitoring, and technology transfer
- Promote education and information

Each Bay Program partner agreed to develop an implementation plan for their respective governor by June 30, 1998, including benchmarks on how these goals and recommendations will be met.

"It is a beautiful and delightsome land with clear rivers and brookes running into a faire Bay. It affords few vegetables or stock for there is little grass, but for that which grows in the marshes, for this country is completely overgrown with trees."

— Captain John Smith, 1607

Goal of Virginia Riparian Buffer Implementation Plan

The overall goal of this plan is to ensure, to the extent feasible, that all streams and shorelines in the Commonwealth will be protected by an adequate riparian buffer.

This program will be implemented state-wide. The agencies of the Commonwealth will work with interested organizations, businesses and private landowners to establish, enhance and maintain various kinds of riparian buffers, as appropriate for the setting and use of the land, recognizing that forested buffers are the ideal. The support and participation of private landowners is the key to the success of the plan, because the overwhelming majority of land adjacent to Virginia streams is in private ownership.

The Commonwealth's commitment to restore 610 miles of riparian forested buffers within Virginia's portion of the Chesapeake Bay watershed is a subset of this overall plan. However, riparian buffers will be counted as part of the 610-mile goal only if they meet the standards (width, species composition, stream types, and management options) found in Appendix B. Achieving the Commonwealth's goals will be a vital contribution toward Virginia's commitment to protect all the waters of the Commonwealth.

Plan Development

The Virginia Riparian Forest Buffer Panel was originally convened by the Secretary of Natural Resources during the 1994 Chesapeake Bay Riparian Forest Buffer Panel process to consider the Virginia landowner perspective. The Secretary reassembled this group (see Acknowledgments, inside the front cover) in spring 1997, under the leadership of State Forester James Garner.

The panel has met regularly for a year to develop this plan. A stakeholder meeting, involving representatives of close to 40 Virginia agencies and private organizations, was held in October 1997 to refine strategies. The panel created a draft implementation plan and conducted five public meetings around the state in March and April of 1998. Comments received are incorporated into this final plan.

This implementation plan reaffirms Virginia's pledge to restore the Chesapeake Bay watershed. Believing strongly in the significance of this endeavor, both the public and private sectors in Virginia are actively involved. This plan highlights the essential role these partnerships need to play in effective stewardship of rivers and streams, enhancing water quality and living resources, and fulfilling long-term environmental goals.

Volunteer Involvement

To be successful, this initiative requires tremendous participation by Virginians from all walks of life. In fact, riparian buffer restoration work has already begun; over ten miles of new forested buffers were created in 1997 and twenty miles in the spring of 1998.

Everyone is welcome to become involved — individuals, landowners, organizations of any size or type, and agencies at any level. Why play an active role? Riparian buffers provide an array of benefits critical to making the environment a healthier place to live for people as well as fish and wildlife. Riparian buffers improve water and air quality, moderate stream temperature, increase aquatic and wildlife habitat, and help stabilize streambanks. Riparian forest buffers offer recreational opportunities. Riparian buffers add to the beauty of the land. Riparian buffers protect the value of land and can produce revenue. And, riparian buffers offer privacy.

This is a chance to be a leader in enhancing Virginia's environment. Everyone can help protect or establish a forest or other buffer type. Interested? Call your local Department of Forestry or Soil and Water Conservation District office to find out what you or your organization can do to reach Virginia's 610-mile goal. Or, you can complete the attached *Count Me In* sign-up sheet.

Future Steps

The Virginia Riparian Buffer Work Group will be established to oversee the implementation of this dynamic and long-term plan to restore Virginia's riparian buffers. Each year, the group will evaluate progress and revise strategies as needed to ensure goals are achieved. A comprehensive assessment of the plan will be conducted every three years.

C O U N T M E I N !

Virginia Riparian Forest Buffer Sign-up Sheet

Interested in helping Virginia conserve and restore 610 miles of riparian forest buffers? We need your active participation to achieve this ambitious goal. Sign up now and let us know where and how you or your group wants to help.

Group Name _____

Contact Person _____

Address _____

_____

Telephone ( ) _____ *Fax ( )* _____

E-Mail _____

I/we are interested in helping with:

ACTION	*TIME FRAME*
1.	
2.	
3.	
4.	
5.	

I/we need:

SUPPORT	*INFORMATION*	*PARTNERS*
1.		
2		
3.		

Please contact us with more information: ❑ ***Yes***

RETURN TO: Mike Foreman, Virginia Department of Forestry
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What is a Riparian Buffer?

Although the definition of riparian areas and buffers may vary depending on the perspective of managers and scientists, various land use settings, and activities carried out in the riparian landscape, the following definitions are provided for the purposes of this plan:

The word *riparian* comes from Latin meaning streambank or shore, and simply refers to land adjacent to a body of water, which serves as a transitional environment that directly affects or is affected by the presence of that water. In this context, a *buffer* is an area maintained in permanent vegetation and managed to reduce the impacts of adjacent land uses.

A *riparian forest buffer* is a permanent area of trees, usually accompanied by shrubs and other vegetation, that is adjacent to a body of water and is managed to maintain the integrity of stream channels and shorelines; to reduce the impact of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals; and to supply food, cover, and thermal protection to fish and other wildlife. In many settings, grass filter strips may be installed upland of the forest buffer to improve its effectiveness. Riparian buffers are important to the health of living resources in and along streams.

Under natural conditions, riparian forests provide a dynamic yet stable buffering system along most shorelines, rivers, and streams in the bay watershed. Most agree that riparian areas do not have fixed, linear boundaries but vary in width, shape and character. In their natural state, most are forested. And, of the various kinds of buffer vegetation, forest buffers offer the greatest range of environmental benefits.

Do Riparian Buffers Work?

Yes. Studies show that buffers are extremely effective in preventing pollutants from reaching streams. Reasonably sized, properly developed and managed riparian buffers are estimated to be nearly 70 to almost 100 percent effective at filtering nutrients and sediment and from runoff. Without riparian buffers, water treatment plants become more necessary and expensive to operate.

Riparian buffers moderate runoff and protect streambanks. Without riparian buffers, many streams become subject to erosion, widening and down cutting, which generates in-stream sediment pollution and threatens nearby buildings, roads, bridges and utilities.

WHAT ARE THE BENEFITS?

- *Filtering Runoff-* Rain and sediment that runs off land can be slowed and filtered in the forest, settling out sediment, nutrients and pesticides before they reach streams. It is common for forested buffers to achieve infiltration rates 10-15 times higher than grass turf and 40 times higher than a plowed field.
- *Nutrient Uptake-* The roots of vegetation absorb fertilizers and other pollutants originating on land. Nutrients are stored in leaves, limbs and roots instead of reaching the stream. Through a process called “denitrification”, forest floor bacteria convert harmful nitrate to nitrogen gas, which is released into the air.
- *Canopy and Shade-* The forest leaf canopy provides shade to keep the water cool, which helps in retaining more dissolved oxygen and encourages the growth of diatoms, beneficial algae and aquatic insects. Also, the canopy improves air quality by filtering dust from wind erosion, construction, or farm machinery.
- *Leaf Food-* Tree leaves fall into a stream and are trapped on woody debris and rocks, where they provide food and habitat for small, bottom-dwelling creatures (such as insects, amphibians, crustaceans, and small fish) which are critical to the aquatic food chain.
- *Fish/Wildlife Habitat-* Riparian forest buffers provide the most diverse habitats for fish and other wildlife. Woody debris provides cover for fish while preserving stream habitat over time. Forest diversity is valuable for birds and other wildlife.
- *Flood Protection-* Riparian forest buffers tend to diminish the force of flood waters, often reducing negative impacts.

TABLE 1

The Effect of Different Size Buffer Zones on Potential Reductions of Sediment and Nutrients from Field Surface Runoff
(from "Lowrance et al", 1995)

Buffer Width ft.	Buffer Type	Sediment Reduction[1] %	Nitrogen Reduction[1] %	Phosphorus[1] %
15	Grass	61.0	4.0	28.5
30	Grass	74.6	22.7	24.2
62	Forest	89.8	74.3	70.0
75	Forest/Grass	96.0	75.3	78.5
95	Forest/Grass	97.4	80.1	77.2

[1]Percent reduction = 100 x (Input - Output)/Input

Another way to measure riparian buffer effectiveness is to compare the cost of establishing and maintaining buffers versus repairing problems created where there are no buffers. These dilemmas are expensive to solve, often involving taxpayer money. Furthermore, experience has demonstrated that structural alternatives that prevent or repair stream channel and shoreline erosion damage are typically much more costly than riparian buffers.

What is the Scientific Viewpoint?

The phenomenon of riparian buffers is not new. They have been under study for 20 years, with knowledge of their values and functions growing rapidly. Yet, it was only recently that scientific research on water quality and ecological functions were applied to managing land use.

"All buffers are not created equal."

COMPONENTS OF A FOREST BUFFER:

- soil structure/hydrology
- organic litter layer
- vegetation composition and age

Scientists agree on the critical habitat functions and research continues to advance technical information about water quality functions of riparian buffers. Studies of natural riparian forests and experimental grass filter strips form the scientific foundation of riparian buffer systems. Although few studies have documented specific water quality changes during a riparian buffer restoration, newly planted buffers are expected to sustain water quality functions similar to a natural system.

In 1995, the Chesapeake Bay Program released a research report, *Water Quality Functions of Riparian Forest Buffer Systems in the Chesapeake Bay Watershed*, by Dr. Richard Lowrance et al. The report firmly supports riparian forest buffers as a pollution prevention tool, describes and quantifies ecological and water quality functions and discusses the predicted effectiveness levels. A non-technical "White Paper" summary is available from the Alliance for the Chesapeake Bay. Table 1 is a sample of information provided about the potential effectiveness of various kinds of buffer systems.

What Are The Considerations?

Here are some issues to consider when establishing priorities for riparian buffer use:

- Habitat- Riparian forests are essential for fish and wildlife, especially for migratory birds, providing a place to rest and feed on long journeys. Targeting for habitat enhancement is different than for water quality.

- Stream Size- More than 70 percent of Virginia's stream miles is comprised of small streams (orders 1-3) and may be priority areas to reduce nutrients. Establishing riparian buffers along small streams is expected to significantly improve water quality by reducing the high nutrient loads relative to flow volumes typical of small streams.

- Continuous Buffers- Establishing continuous riparian forest buffers in the landscape should be given a higher priority than establishing larger but fragmented buffers. Continuous buffers provide better stream shading and water quality protection, as well as corridors for the movement of wildlife.

- Geography- Water quality benefits of riparian forest buffers may be highest in the Coastal Plain, Piedmont, and specific areas of the Valley and Ridge provinces.

- Degree of Degradation- This is directly related to the benefits expected from riparian buffers. Streams in areas without forests, such as pastures, may benefit the most, while highly urbanized/altered streams may not be able to provide high levels of pollution control.

- Loading Rates- The removal of pollutants may be highest where nutrient and sediment loadings are the highest.

- Land Use- The way the land will be used will influence the width and types of vegetation used to establish a riparian buffer. While the three-zone riparian forested buffers described on the following page are the ideal, they may not always be feasible to establish.

"Water of quality is necessary to support a balanced, integrated, adaptive community of riparian and aquatic organisms comparable to the natural systems of the region, with the stability and capacity for self-repair."

—James Karr, 1978

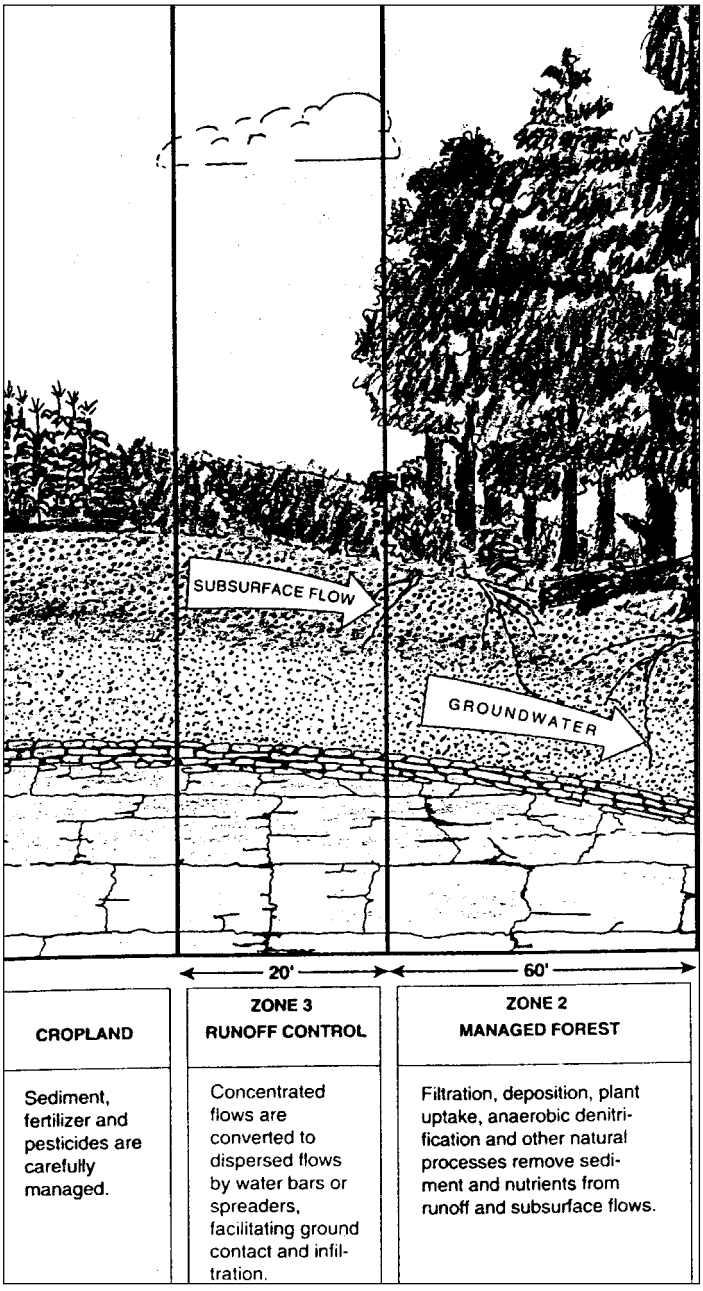
What is a Model Three-Zone Riparian Forest Buffer?

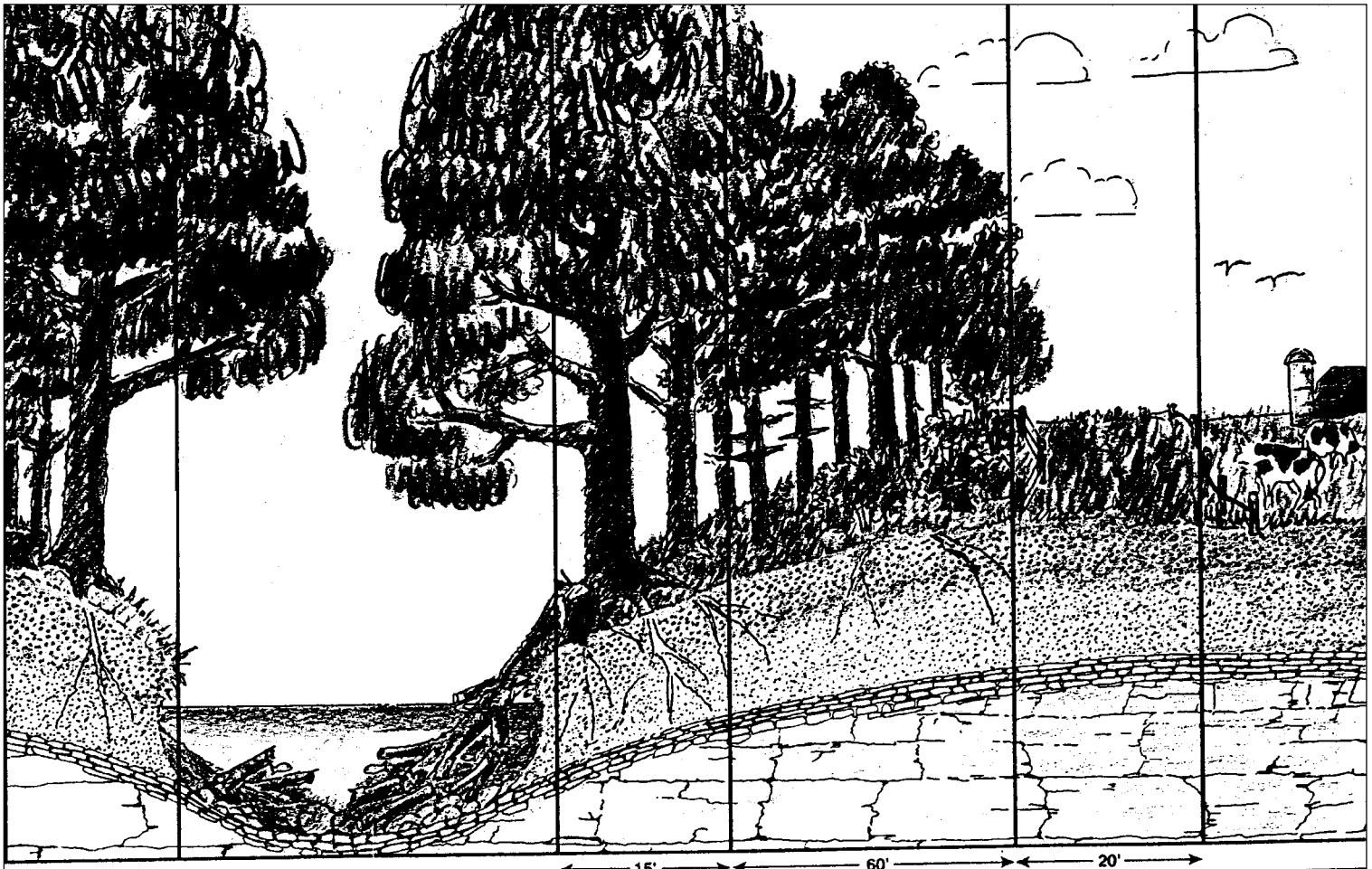
A three-zone buffer system is a model to help plan riparian forest buffers. This highly flexible system is designed to achieve better water quality and other landowner objectives. A three-zone riparian forest buffer may not be necessary or even achievable in every setting, but the model is included in this plan as an example of the best case riparian buffer. The three zones are described below and depicted in the accompanying graphic.

Zone 1- This zone, the inner core of the buffer closest to the water, extends upland from the stream's edge, stabilizing the streambank and providing habitat for aquatic organisms. Here, the tree roots reduce soil erosion by flowing water, and keep sediment and any nutrients bound to it out of the stream. This zone will improve habitat along all streams, with its greatest impact being along smaller streams where the canopy shades the water, providing maximum control over light and temperature. The width of Zone 1 can vary from 15 - 25 feet.

Zone 2- Located immediately landward of Zone 1, this zone protects water quality by removing, transforming, or storing nutrients, sediments and other pollutants. Also, Zone 2 provides food and shelter for hundreds of wildlife species. The width of this zone is typically 50-75 feet. However, it can vary depending on stream order, topography and soil type

Zone 3- Immediately landward of Zone 2, this zone contains grass filter strips or other control measures to slow runoff, filter sediment and related chemicals, and allow water to infiltrate the ground. Grass filter strips help protect the wooded areas and set the stage so the riparian forest buffer can perform at its peak. Zone 3 spreads out the water flow and prevents adjacent land use runoff from eroding channels through the buffer. This enables Zone 2 to effectively trap sediment because the runoff is in the form of sheet flow. The width of this zone generally varies from 20-25 feet.





15'	15'	60'	20'	
ZONE 1 UNDISTURBED FOREST	**STREAMBOTTOM**	**ZONE 1 UNDISTURBED FOREST**	**ZONE 2 MANAGED FOREST**	**ZONE 3 RUNOFF CONTROL**	**PASTURE**
Maturing trees provide detritus to the stream and help maintain lower water temperature vital to fish habitat.	Debris dams hold detritus for processing by aquatic fauna and provide cover and cooling shade for fish and other stream dwellers.	Tree removal is generally not permitted in this zone.	Periodic harvesting is necessary in Zone 2 to remove nutrients sequestered in tree stems and branches and to maintain nutrient uptake through vigorous tree growth.	Controlled grazing or haying can be permitted in Zone 3 under certain conditions.	Watering facilities and livestock are kept out of the Riparian Zone insofar as practicable.

In October 1996, former Governor George Allen committed Virginia to plant 610 miles of riparian forest buffers by 2010, an average of more than 43 miles annually. This plan, which outlines recommendations to Governor Jim Gilmore, addresses how Virginia can meet this pledge. The six objectives outlined in this plan are based on the Chesapeake Executive Council's goals and policies. The following is a description of each objective, key background information, and specific strategies. It is recommended that the plan's implementation be led by a Riparian Buffer Work Group, to be appointed by the Secretary of Natural Resources. Although the Work Group's creation is not specifically set forth as a task until Objective 3, the Work Group is referred to throughout the plan.

Objective 1- Restore Missing or Inadequate Riparian Buffers

Increase the use of all riparian buffers and restore riparian forests on at least 610 miles of stream and shoreline in the watershed by 2010, targeting efforts where they will be of greatest value to water quality and living resources.

This objective identifies programs, strategies, and other efforts to establish riparian buffers in needed areas. The most common methods are planting and natural regeneration, letting shrubs and trees seed an area naturally and grow.

Recognizing that forested buffers may not be appropriate for every setting, this initiative will promote planting and restoration of all riparian buffer types. Virginia will endeavor to track all planted and restored riparian buffers.

However, buffers will be counted as part of the 610-mile goal only if they are in Virginia's portion of the Chesapeake Bay basin and meet the standards (width, species composition, stream types, and management options) found in Appendix B. These riparian buffers must establish or expand tree and shrub vegetation 35 feet or more from the water or wetlands. The Virginia Riparian Buffer Inventory Form for tracking is in Appendix C.

Strategies

- Identify restoration sites. Inventory and site targeting tools will be developed using current technology, such as digital imagery and geographic information systems (GIS). Three such tools are under development:

  - The Virginia Institute of Marine Science has developed a GIS tool for targeting critical watersheds for riparian forest buffer restoration.

  - King William County has developed a GIS tool, using ArcView 3.0 software, to more specifically identify potential restoration sites.

  - The organization *American Forests* is developing a computer program to estimate forest buffer benefits, including nutrient reduction, based on site and buffer type characteristics. This software can be used to prioritize watersheds or restoration sites by identifying water quality and habitat benefits and available funding.

  Beginning as soon as the members are appointed, the Virginia Riparian Buffer Work Group will help develop, refine and promote these tools, and provide technical assistance.

- Develop local watershed-based plans for specific actions. Support will be provided to local endeavors to identify sites and recruit volunteers. The Work Group will coordinate with major planning efforts to promote riparian buffer restoration. These undertakings include the Tributary Strategies development process, the State process to develop Total Maximum Daily Loads (TMDLs) for impaired waters, Chesapeake Bay Program Local Government Advisory Committee's Stream Restoration Initiative, USDA-Natural Resource Conservation Service's National Conservation Buffer Initiative, *American Forest's* Global Releaf program, and the Virginia Water Quality Improvement Fund grant program.

  From available inventories, GIS and database tools can be used for targeting local priority watersheds or finding local high-priority planting sites. Potential high-priority sites should be visited to review buffer conditions and consult with landowners. Agricultural, forested, and developed land uses will need different approaches and buffer designs.

Establishing riparian buffers will be considered in the larger land management context, with many practices available to protect water quality and stream habitat. An example is farmland where a variety of conservation practices, such as grassed waterways, grass filter strips, stabilized stream crossings, and alternative water sources, should be used with a riparian buffer. Each practice helps control sediment and nutrients differently. Streambank stabilization also will be considered. Bank stabilization projects will be pursued along with riparian buffers. While these kinds of efforts may not count towards the goal of restoring 610 miles of riparian forest buffers within Virginia's Bay watershed, they are still vitally important to the overall goal of adequately buffering all streams.

- Establish education outreach to volunteer groups. By September 30,1998, the Work Group will review public information materials about stream restoration. They will determine if there is adequate information on how to restore, conserve and maintain a riparian buffer. By December 31, 1998, the Work Group will identify appropriate volunteer and other community organizations. By March 31, 1999, the Work Group will ensure needed stream buffer information is available for inclusion in these organizations' public information materials and training efforts.

- Provide sufficient planting stock. By December 31, 1998, the Work Group will conduct initial discussions with state and private plant nursery representatives about providing riparian buffer planting stock. By June 30, 1999, working in cooperation with participating nurseries, the Work Group will develop a plan and timetable for providing riparian buffer planting stock. Priorities include investigating state nursery support to allow hardwood seedling production, and gathering information on nurseries that can provide suitable buffer trees and shrubs. Opportunities to grow planting stock under contract will be pursued, and may include corporate and federal partners.

Virginia s Bay Program Riparian Forest Buffer Initiative: Annual Benchmarks

These cumulative benchmarks will be used to mark Virginia s progress toward the 610-mile goal.

Year	Cumulative Miles
2000	80
2002	150
2004	300
2006	450
2008	550
2010	610

- Plant riparian buffers and provide maintenance information. As requested, the Work Group will provide technical assistance on planting or restoring riparian buffers to land-owners and local governments. By December 31, 1998, the Work Group will provide *Fact Sheets* on maintaining various buffer types to participating local governments and landowners.

Objective 2- Conserve Existing Riparian Buffers

Conserve existing forests along streams and shorelines.

This initiative enhances existing conservation mechanisms, develops new ones, and pursues an integrated watershed management program to address riparian buffer protection.

Conservation strategies protect existing riparian buffers as well as newly established buffers, creating substantial long term benefits. Strategies can include protecting water quality and living resources, maintaining geomorphological stream stability, reducing degraded stream restoration costs, and furnishing greater flood protection.

This objective is more difficult to address, since most conservation programs fill the gaps rather than preserve effective measures already in place. However, there are some actions Virginia can take to track pro-active conservation measures of existing riparian buffers.

Riparian buffers can be conserved as part of broad environmental management programs such as state and federal mandates for pollution control, state partnerships for restoration of the Chesapeake Bay, and other land conservation programs. Riparian buffer conservation can

be assured through numerous public or public/private partnerships, and new incentives.

Virginia's land use decisions are made primarily by localities, so many approaches discussed involve local government efforts.

Existing Endeavors

An array of regulatory programs are already helping Virginia protect existing riparian buffers and establish ones where needed.

For example, federal and state wetlands protection programs prevent the unjustified development of wetlands along Virginia streams. Plus, many of Virginia's local governments have strong protection programs for streamside areas.

The Chesapeake Bay Preservation Act regulations implemented by localities in Tidewater, Virginia, require 100-foot wide vegetated buffers around tributary streams, tidal wetlands, and the wettest nontidal wetlands. If existing buffers are forested, the trees must be conserved. Also, these localities' comprehensive plan updates must address water quality protection methods, including riparian buffer establishment and protection. Most of these jurisdictions implement plan recommendations by including buffer protection in planning, zoning, and subdivision codes.

Urban localities have additional riparian buffer considerations because the National Pollutant Discharge Elimination System (NDGS) permits include storm sewer outfalls. The NPDGS treats runoff from roads and developed areas as controllable point source pollution discharges. An emerging effort to protect water quality from nonpoint pollution sources is Virginia's Total Maximum Daily Loads (TMDLs) program. Riparian buffers could be one measure to prevent water body pollutants from exceeding acceptable limits set through the TMDL program.

On another front, voluntary programs for conserving undeveloped land have been growing. Private land trusts, such as the Valley Conservation Council, that purchase or accept development rights donations are on the rise. Many of these conservation easement programs target riparian buffers.

Strategies

- Document riparian buffer conservation on State-owned lands and National Forests. A system will be established to report riparian buffer conservation ventures on state owned lands and national forests to the new tracking database (see Targeting and Tracking p. 22). In July 1998, the Virginia Department of Forestry will initiate this system by working with Virginia's two national forests and by including similar state forest activities in the database.

- Identify riparian buffers in easements held by Land Trusts/ Conservancies. By December 31, 1998, the Work Group will identify existing Land Trusts and Conservancies by surveys. The Work Group will (1) review typical easement language to determine if riparian buffer conditions are sufficient, and (2) develop and distribute model riparian buffer language for use in these easements.

- Determine riparian buffers in easements due to local government tax breaks. The 1998 General Assembly passed House Bill 1419 (Appendix D) authorizing localities to provide tax relief for certain land categories. Riparian forest buffers are included if the land is in perpetual easement.

  Communities offering this tax relief may apply for Virginia Water Quality Improvement Fund grants to restore revenue. By December 31, 1998, the Work Group will establish a communications method with localities to track riparian buffer conservation easements.

- Determine Riparian buffers in easements through USDA programs. By December 31, 1998, the Work Group will establish a mechanism to track these buffers.

- Establish education outreach to volunteer groups. By September 30, 1998, the Work Group will review public information materials about stream restoration. It will determine if there is adequate information on how to restore, conserve and maintain riparian buffers. By December 31, 1998, the Work Group will identify

appropriate volunteer organizations such as Adopt-A-Stream, Adopt-A-Bridge, to receive information on establishing riparian buffers . By March 31, 1999, the Work Group will ensure that necessary information is available to these organizations for their public information materials and training efforts.

- Coordinate goals and priorities with state and local integrated watershed management programs. The Bay's natural systems do not observe jurisdictional boundaries. Recognizing this, Virginia has been moving toward implementing pollution control and natural resource protection programs on a watershed basis. Most notably, Virginia is establishing a Geographic Information System and database that more effectively targets limited resources to watersheds with the greatest needs. This includes watersheds that contribute the most pollution or have streams and natural systems needing the most restoration.

State agencies implementing watershed-related programs are establishing ways to coordinate affected localities' efforts to promote effective use of resources and consistent local resources policies. To ensure riparian buffer and stream efforts receive priority, the Work Group will participate in watershed projects and promote buffer monitoring at key sites.

Objective 3- Enhance Program Coordination and Accountability

Establish mechanisms to streamline, enhance, and coordinate existing programs related to riparian buffers and riparian system conservation.

This initiative sets forth ways to effectively coordinate and encourage the multiple programs involved in Virginia's riparian buffer efforts. It identifies roles, develops public education strategies, establishes tracking devices, and promotes volunteer and private commitment.

An array of programs and individuals are involved in conserving or creating riparian buffers, which provide public benefits in many different ways. Participants come from all walks of life. They come from:
- local, state and federal government;
- nonprofit organizations, community associations, service organizations;
- business and industry; and
- private landowners.

To identify and compare major Bay state riparian forest buffer programs, an analysis was conducted. Performed during the Chesapeake Bay Riparian Forest Buffer Panel Process, the study was led by the Chesapeake Bay Commission. Here are key findings:
- Few existing programs provide a specific riparian forest buffer focus
- Many programs are unnecessarily bureaucratic, complicated and burdensome to administer; and
- Many agencies and conservation groups are involved in riparian forest buffer activity, with varying support levels

Forming the Virginia Riparian Forest Buffer Panel early in the Chesapeake Bay Riparian Forest Buffer Panel process has enhanced coordination among agencies and conservation groups. Where many other conservation programs address riparian buffers in some manner, buffers are the principle focus in only a few.

Duplication remains prevalent among some conservation programs. This is especially noticeable in financial cost-share programs for riparian buffers. A Natural Resources Conservation Service Technical Advisory Committee oversees federal cost-share applications for conservation. The Virginia Department of Conservation and Recreation administers the state Chesapeake Bay cost-share program and the Virginia Water Quality Improvement Act grant program.

Sharing experiences, information and resources can reap significant benefits and efficiencies. Such coordination can be quite challenging.

Strategies

- Establish Virginia Riparian Buffer Work Group. The Secretary of Natural Resources will establish this Work Group by September 1, 1998. The Work Group will oversee and coordinate the Riparian Buffer initiative. The Virginia Department of Forestry (DOF) will be the lead agency and provide staff to chair the Work Group. Other agencies to serve on the Work Group are:
  - Chesapeake Bay Local Assistance Department
  - Department of Conservation and Recreation
  - Department of Environmental Quality

- Department of Game and Inland Fisheries
- Department of Agriculture and Consumer Services
- Virginia Delegation to the Chesapeake Bay Commission
- Virginia Tech School of Forestry and Wildlife
- Virginia Institute of Marine Science
- U.S. Department of Agriculture - Natural Resource Conservation Service
- U.S. Department of Agriculture - Forest Service (National Forests in Virginia)
- Cooperative Extension Service

- Obtain an Executive Order addressing riparian buffers on state-owned lands. By October 31, 1998, the Work Group will formally request that the Secretary of Natural Resources ask the Governor to adopt an Executive Order by December 31, 1998. This order will require each Virginia land-holding agency to take these uniform steps:
  - Develop measurable indicators for riparian buffer restoration and conservation, consistent with Work Group guidance;
  - Establish the agency's portion of the 610-mile target for which it will be accountable
  - Coordinate the agency riparian buffer plan with the state's ongoing *Tributary Strategy* development process; and
  - Establish appropriate riparian buffers for all streams on state land by July 1, 2005 (Governor's office to approve exceptions).

- Develop Memoranda of Agreement. By December 31, 1998, the Work Group will develop more specific agency roles for the Virginia Riparian Buffer Initiative. This breakdown will be the foundation for coordinating agency riparian buffer programs. By June 30, 1999, each participating Work Group agency will complete a Memorandum of Agreement, outlining responsibilities, with the Virginia Department of Forestry. In addition, by September 30, 1998, Virginia will carry out a Memorandum of Agreement with *American Forests* to use the *Stream Releaf* logo in program promotion, consistent with Bay state partners.

- Promote private sector involvement. By October 31, 1998, the Work Group will enlist the services of *American Forests' Stream Releaf* Campaign to encourage private sector involvement in conserving and restoring riparian buffers. Also, the Work Group will use the *Business for the Bay* program to promote private sector support.

- Designate local Department of Forestry offices and Soil and Water Conservation Districts as program field contacts. These agencies will make appropriate referrals to participating agencies, such as the Department of Game and Inland Fisheries, the

USDA-Natural Resource Conservation Service, and the Chesapeake Bay Local Assistance Department.

To coordinate program efforts and opportunities effectively, designated agency staff will give landowners information and guidance developed by their own agency or the Work Group.

- Provide a riparian buffer source book. To increase public awareness about riparian buffers, the Work Group will provide a Riparian Buffer Source Book by December 31, 1998. This publication will include a riparian buffer primer, known riparian buffer programs, and priority areas for riparian buffer establishment. This resource will be updated as needed.

- Initiate a single tracking system. By September 1, 1998, a standardized tracking device will be instituted, with riparian buffer participants reporting progress twice a year to the Virginia Department of Forestry. To accomplish this, the Work Group will take two actions.

  First, it will publicize criteria for counting riparian forest buffer miles (Appendix B) and the standardized tracking form (Appendix C). These will be distributed through local Department of Forestry offices, local Soil and Water Conservation District offices, and participating agency Internet home pages.

  Second, the Work Group will mail tracking information to Virginia localities and other organizations, such as Land Trusts and Conservancies, and appropriate volunteer and community organizations.

- Develop a spot-check tracking database. By December 31, 1998, the Department of Forestry will establish this database. By June 30, 1999 the Work Group will agree on a process to spot check a certain percentage of reported riparian buffer restorations

and conservation activities. Beginning in 1999, the Department of Forestry will prepare an annual report summarizing riparian buffer restoration progress and spot check activity results. This report will be submitted to the Secretary of Natural Resources by September 30 of each year. In addition, all who provide tracking forms will receive a report.

- Establish a program to coordinate and support volunteer activities. By June 30, 1999, the Work Group will develop a training program for community volunteers on how to implement stream corridor management and how to establish and maintain riparian buffers.

  The Work Group will assess staffing needs for volunteer outreach and training at one or more participating agencies. Identified recommendations will be sent to the Secretary of Natural Resources by August 1, 1999, for consideration in the 2000-2002 biennium budget.

Objective 4- Enhance Incentives

Develop and promote an adequate array of incentives for landowners and developers to encourage voluntary riparian buffer retention and restoration.

This initiative identifies innovative funding sources, recommends local tax incentive legislation, and enhances funding alternatives to energize voluntary alliances in riparian buffer protection across Virginia.

In most respects, this undertaking is voluntary. Even where regulations apply locally, such as the Chesapeake Bay Preservation Act requirements, a key element to the program's success is incentives, designed to prompt large-scale participation.

Previously, these incentives have been offered by a mix of federal, state and local agencies, businesses and private non-profit organizations. Examples of these incentives are the Federal Government's Conservation Reserve Program, Virginia's Chesapeake Bay Cost-Share Program, and Use-Value Taxation.

Incentives may take many forms:
- Formal recognition expressing Virginia's appreciation for a landowner's cooperation — for example, a Governor's citation granted to participating landowners who do not request funding assistance
- Grants and cost-share payments
- Rent payments for land taken out of production or used for conservation
- Payment for seedlings and other supplies
- Low interest loans, loan guarantees and easement purchases
- Tax incentives

To determine the relationship of incentives to the success of riparian forest buffer installations, the 1996 analysis mentioned in Objective 3 evaluated such programs. The report shows that:
- Incentive programs having requirements, such as entry fees, and minimum acreage or time commitments, discourage participation;
- Not all programs have a specific riparian buffer component or the ability to differentiate between administrative overhead and implementation relating to establishing, protecting and maintaining riparian buffers;
- Federal and state incentive funds for riparian buffers are unstable, adversely affecting programs such as the Stewardship Incentive Program, Forestry Incentive Program, Environmental Protection Agency Section 319 Grants and Coastal Zone Section 6217 grants;
- Programs which mandate mitigation for forest land loss or a set-aside acreage designation often have requirements which do not recognize riparian forest buffer establishment as a legitimate compliance method;
- The number and variety of cost-share programs confuses landowners.

The entire incentive spectrum will be considered, although tax incentives and grants are generally recognized as the most effective. The major incentive categories are direct financial aid and tax/zoning enticements. Recently, state and federal cost-share programs have emphasized riparian buffers.

Strategies

- Implement enabling legislation authorizing tax breaks for riparian forest buffer lands. The 1998 General Assembly adopted Del. Paul Harris's House Bill 1419 (Appendix D). This authorizes localities to provide partial or total property tax relief for riparian forest buffer lands placed in perpetual conservation easement with a jurisdiction. This authorization became effective July 1, 1998.

- Make Water Quality Improvement Fund money available to reimburse localities for revenue losses due to buffer land tax breaks. This has been achieved. As a matter of policy, Governor Gilmore has indicated it is acceptable for localities to apply for Water Quality Improvement Fund grants to reimburse them for revenue lost due to allowing partial or total tax exemption of riparian forest buffer lands. However, in order to receive the reimbursements, local governments must ensure that the buffers for which tax breaks were provided meet certain standards set forth in the guidelines for the Water Quality Improvement Fund grants.

- Seek enabling legislation to exempt riparian forest buffers from estate taxes. By June 30, 1999, the Work Group will recommend legislative language to the Secretary of Natural Resources. This legislation will authorize localities to exempt riparian forest buffers from estate taxes. In addition, the Work Group will coordinate with Bay State partners to seek similar federal legislation.

- Encourage localities to use stormwater utility fees for establishing riparian buffers. Recently, Henrico County proposed an innovative approach to restore structural integrity and riparian buffers to many streams degraded by development. Plans call for this effort to be the centerpiece of Henrico's countywide watershed improvement program. Funds are to come from stormwater utility fees. The Chesapeake Bay Local Assistance Department has reviewed the conceptual plan and encouraged the county to gather needed data for prioritizing watersheds and streams. This project may be an excellent model for integrating stream and riparian buffer restoration with local stormwater management programs. As this project unfolds, the Work Group will communicate the concept, study the economics, and provide the results to other localities. If the project is as successful as expected, the Work Group will promote this model for use in other areas.

- Seek Conservation Reserve Enhancement Program Funds through the USDA - Farm Services Administration. This program is a modification of the USDA Conservation Reserve Program, used for several decades to take highly erodible or environmentally sensitive land out of agricultural production and restore it to more permanent, stable vegetation. Under the program, 10- or 15-year contracts pay rent to landowners for land placed in continuous vegetation or trees.

  Maryland was the first state to receive a USDA Conservation Reserve Enhancement Program Funds grant. Totaling $170 million, the grant is being used to encourage landowner establishment of forest and grass riparian buffers and restoration of wetlands. By December 31, 1998, Virginia will submit an application to the U.S. Department of Agriculture for a similar grant.

- Consolidate and improve cost-share and grant programs. By June 30, 1999, the Work Group will develop a matrix of funding assistance programs related to forest buffer restoration. The matrix will include links between programs that may be eligible for cross- matching or piggybacking. Hopefully, this will help landowners take full advantage of funding sources. The Work Group will contact funding agencies with programs that can be cross-matched or piggybacked, encouraging them to allow and promote these opportunities. Agencies can inform landowners of their options and work pro-actively with sister agencies to accomplish multiple grants. Other strategies are:
  - Explore the feasibility of giving higher priority to funding regional or multi-jurisdictional projects. The Work Group will contact agencies and organizations providing buffer restoration funding assistance to encourage higher priority for regional or other coordinated actions.
  - Within their agencies, Work Group members will endeavor to create categories of small, flexible grants for riparian buffers and stream restoration. These grants will encourage alternative watering systems and fencing for agricultural pasture situations.

- Encourage flexibility in local zoning and subdivision requirements. The Chesapeake Bay Local Assistance Department is working with Virginia's Tidewater localities to reconcile land management code conflicts. These conflicts impact implementing requirements in the Chesapeake Bay Preservation Act Regulations, including those about vegetated buffer areas.

  For example, the 100-foot wide buffer requirement is essentially a setback. Older lots having this requirement imposed after applying other subdivision setbacks may have too small an area on which to build legally. Local governments are encouraged to resolve such conflicts by easing the front street setback, rather than reducing the buffer setback width. As this effort progresses, such concepts will be communicated to other Virginia communities.

- Promote expansion of local government land-use management tools. The Work Group will continue studying the suitability of such programs as Cluster Development, Purchase-of-Development-Rights, Transfer-of-Development-Rights and effluent trading in Virginia. If these programs are deemed appropriate, the Work Group will support passage of legislation authorizing such mechanisms in local land use programs.

- Seek increased funding for conservation easements through the Open Space Lands Preservation Trust Fund. By June 30, 1999, the Work Group will evaluate public trust funds dealing with conservation easements. A report will be submitted to the Secretary of Natural Resources with recommendations to increase appropriations to one or more of these funding sources.

- Explore small business assistance programs as funding sources. Farmers and landowners making a living from their property are the original American small business owners. However, few participate in the small business assistance programs. Some programs may be appropriate to help landowners develop improved riparian buffer protection and explore alternative income possibilities from riparian forested buffers. By June 30, 2000, the Work Group will determine if such state financial assistance programs are available. Through this process, the Work Group will identify needed statutory and regulatory changes to use current or new small business assistance programs.

- Establish recognition programs. By June 30, 1999, the Work Group will decide if existing conservation programs and related recognition programs are appropriate to recognize landowners and organizations for their riparian buffer efforts. If new recognition programs are needed, the Work Group will submit a report to the Secretary of Natural Resources recommending their creation, including detailed recommendations about program mechanics and necessary legislation.

Objective 5- Promote Education and Outreach

Encourage Bay signatories to implement education and outreach programs about the benefits of riparian buffers and other stream protection measures.

This initiative identifies strategies, programs and partners to educate the public about riparian buffer benefits and encourage active support.

Comprehensive public education is the single most critical component of this initiative.

Education will increase awareness of the issues. It will educate target audiences on the benefits. It will teach them positive actions to take. Plus, it will motivate audiences to be dynamic players in Virginia's riparian buffer initiative.

Many ongoing or recently completed riparian buffer projects have been installed with little or no cost sharing. This occurs because the main reason landowners restore streamside forests is to be good natural resource stewards. They have learned about riparian buffer values and benefits from federal or state agencies, or private non-profit conservation groups.

At the same time, the value of outreach is difficult to measure and more challenging to accomplish in the wake of government fiscal austerity. Significant outreach must occur to meet Virginia's 610-mile pledge of new riparian forest buffers.

This vital endeavor will require funding to conduct a comprehensive public education campaign. The monies can be provided to one or more state agencies to increase involvement or to contract a private public relations firm.

Strategies

- Initiate a major public relations campaign in concert with *American Forests*. By December 31, 1998, the Work Group, with the Department of Forestry at the lead, will seek grant funds or a General Assembly appropriation. It will be key to ensure funding is adequate for an effective campaign. These funds will be used to hire a professional firm to develop and conduct a public education campaign promoting the Riparian Buffer Initiative.

  This campaign, *Virginia Releaf* or *Stream Releaf*, will be coordinated with *American Forests*, consistent with Bay Partner states. This will maintain a "sense of the Bay" and program continuity across state lines. This public education campaign, including evaluation, will include:
  - Enlisting participation of one or more famous native Virginia personalities from show business, sports, business, and government, as spokesperson(s);
  - Integrating a single message among stakeholders;
  - Targeting "absentee landowners" who are not full-time residents of their land and may not be fully aware of the initiative or have the same environmental commitment as they would for lands where they reside; and
  - Creating a "neighbor to neighbor" program, increasing continuity and proximity among riparian landowners

- Promote private sector involvement. By October 31, 1998, the Work Group will enlist the services of *American Forests' Stream Releaf* Campaign and *Businesses for the Bay*. Associated public information materials will be used to promote and engage the private sector in conserving and restoring riparian buffers.

Private industry involvement in the riparian buffer initiative is integral to achieving riparian forest buffer restoration of 610 miles by 2010. Recognizing the need to be fiscally responsible, the private sector offers a major funding alternative. Fortunately, many private industries currently are seeking a role in environmentally friendly activities. For example, a local Virginia quarry company donated rock for streamside restoration. Other strategies for private sector involvement are to:

- Incorporate the private sector in new public recognition programs;
- Develop demonstration projects on private land, especially highly-visible corporate sites;
- Encourage Virginia's nurseries to grow more native riparian plants for buffer use; and
- Host a roundtable to encourage private sector riparian forest buffer efforts.

- Coordinate with young people's education programs. By June 30, 1999, the Work Group will determine if sufficient riparian buffer information is in existing environmental education programs for children. These programs include Project Learning Tree, Project Wet, and Project Wild. If not, the Work Group will cooperate with program sponsors to incorporate such data.

- Promote activities of local watershed organizations. Linking with local watershed protection groups and other community organizations, the Work Group will promote local stream and riparian buffer efforts.

- Increase demonstration areas in each tributary. On an ongoing basis, the Work Group will partner with participating conservation agencies, local governments, and private businesses and organizations to establish highly visible riparian buffer demonstration areas around the state.

- Provide public information through real estate companies and chambers of commerce. Three areas — the Eastern Shore, the Middle Peninsula, and the Northern Neck — have developed regional *Almanacs*. The publications, funded by The Chesapeake Bay Local Assistance Department and the Virginia Coastal Resources Management Program, include a wealth of practical natural resource information. Chambers of commerce and real estate companies, promoting interest and economic development in their regions, are distributing these handsome but inexpensive coffee-table editions.

  Future editions of these *Almanacs* could incorporate riparian buffer information to increase public awareness. Furthermore, organizations in other regions of the Commonwealth could develop their own editions.

- Continue cross training among participating state and federal agencies. The Work Group will continue to provide a forum for cross training administrative and field staffs about sister agency programs. This strategy will be designed to help each agency understand how the different agencies' riparian buffer programs link and overlap, and to avoid program requirement conflicts. Ideally, this will make it easier for landowners to get assistance, by minimizing confusion from working with multiple agencies.

  For example, there is a single soil and water quality conservation plan for farmers that requires them to meet multiple agency criteria. Also, the Work Group could develop a simple method for landowners to take advantage of multiple funding sources from various agencies that may match or piggyback one another.

- Link riparian buffer restoration data with the Virginia Geographic Information Network. After July 1, 1999, the Department of Forestry will provide the Virginia Geographic Information Network with computer links to any updated geographic information system files and maps. These will show where riparian forest buffers are and their condition. The network will be a clearinghouse for this data. The public will be able to access these maps through the network's home page, which is one more link in educating the public about riparian forest buffers.

Objective 6- Target, Track and Conduct Research

Increase the level of scientific and technical knowledge of the function and management of riparian forest and other buffers, as well as their economic, social, ecological, and water quality values.

This initiative develops targeting and tracking strategies and efforts to support riparian buffer conservation and restoration.

As Virginia implements the Riparian Buffer Initiative, it is essential that two key actions transpire. First, efforts must be targeted where the greatest water quality and living resource benefits can be achieved. Second, it is critical that Virginia tracks the progress of the numerical restoration goal and the general conservation goal pertaining to riparian buffers.

In 1996, it was determined that the condition of the Chesapeake Bay watershed's riparian forest buffers needed assessing. To accomplish this, the EPA Bay Program Office contracted with Pennsylvania State University to perform computer-modeling work synthesized with a Geographic Information System and satellite image technology. Each Bay state partner has received the 1996 imagery and protocols for adequate riparian forest buffer determination.

Working together, the Virginia Department of Forestry and the Department of Conservation and Recreation have organized this data in the context of Virginia's 494 watershed sub-units. This mapping provides the tracking starting point, and the data is available to the public.

Strategies

- Target riparian buffer efforts where the greatest benefits can be achieved. Virginia's targeting mechanisms under development or in use, as well as program coordination involving targeting, are addressed in the first two strategies of Objective 1 (see Restore Existing Riparian Buffers).

- Establish a riparian buffer-tracking program. The Work Group will distribute the Riparian Buffer Inventory Forms (Appendix C) and collect them twice a year through the Department of Forestry's central clearinghouse. Semi-annually, the Work Group will report progress to the EPA Bay Program Office.

- Develop a system to inventory and track progress. The Department of Forestry will use the Penn State data set, modified to fit Virginia watershed boundaries, as the initial riparian buffer tracking and inventory system. As technology and data resolution improve, the system will be upgraded. The Work Group will coordinate with the EPA Bay Program Office about periodic inventory updates.

  Currently, Bay state partners have discussed conducting an inventory every five years using a similar snapshot approach, continually improving data resolutions. If this Bay-wide inventory is not repeated, the Work Group will pursue grant funding to secure an inventory every five years, beginning in 2001.

- Pursue riparian buffer research opportunities. The ecological benefits of riparian buffers are known. However, the relative costs and benefits of riparian buffer restoration are generally unmeasurable for many Virginia areas and the Bay watershed.

  Only recently have tools such as the American Forests *Citygreen* computer program shed new light on the quantifiable aspects of forest buffers, such as temperature moderation, stormwater flow retention, and nutrient reduction. These are based on specific site and buffer characteristics. *Citygreen* is now being customized to reflect vegetation and conditions in the Bay watershed and will be used in Virginia when available. More specific strategies are:
  - By December 31, 1998, the Work Group will establish a multi-disciplinary research team to pursue riparian buffer research in Virginia;
  - The research team will intensify research efforts through state and federal programs to examine buffer costs and benefits;
  - During 2000, the research team will conduct a study to establish the effect of riparian forest buffers on real estate values;
  - During 2001, the research team will conduct a study to determine the average cost per pound of nutrients prevented from entering waterways by riparian buffers; and
  - The research team will look for opportunities and funding sources to conduct further research, enhancing understanding of riparian buffer functions and effectiveness in various physiographic settings and of the most effective methods of establishing riparian buffers.

OBJECTIVE/STRATEGY	1998	1999	2000	2001	2002	2004	2006	2008	2010	2011
RESTORE MISSING/INADEQUATE RIPARIAN BUFFERS						On-Going				
• Identify restoration sites						On-Going				
• Develop local watershed-based plans for specific actions						On-Going				
• Establish education outreach to volunteer groups										
• Review existing public information	9/30									
• Complete survey of organizations	12/31									
• Include materials in information and training		3/31								
• Provide sufficient planting stock										
• Discuss with state and private nurseries	12/31									
• Develop timetable for providing plant stock		6/30								
• Plant buffers and provide maintenance information						On-Going				
• Bay watershed benchmarks (cumulative miles)			80		150	300	450	550	610	
CONSERVE RIPARIAN BUFFERS						On-Going				
• Document riparian buffer conservation on State and National Forest lands						On-Going				
• Identify riparian buffers in easements held by Land Trusts and Conservancies						On-Going				
• Survey to identify Land Trusts/Conservancies	12/31									
• Review typical easement language and develop model language about riparian buffers										
• Determine riparian buffers in easements due to local government tax breaks						On-Going				
• Establish an appropriate tracking mechanism	12/31									
• Determine riparian buffers in easements through USDA programs						On-Going				

OBJECTIVE/STRATEGY	1998	1999	2000	2001	2002	2004	2006	2008	2010	2011
• Establish education outreach to volunteer groups										
• Review existing public information	9/30									
• Complete a survey of organizations	12/31									
• Include materials in information and training		3/31								
• Coordinate goals and priorities with state and local integrated watershed management programs						On-Going				
ENHANCE PROGRAM COORDINATION AND ACCOUNTABILITY						On-Going				
• Establish a Virginia Riparian Buffer Work Group	9/1									
• Obtain an Executive Order addressing riparian buffers on state-owned lands										
• Ask Secretary of Natural Resources to ask the Governor for an Executive Order	10/31									
• Governor executes Order	12/31									
• Develop Memoranda of Agreements										
• Create Memorandum of Agreement between Virginia and *American Forests*	9/30									
• Identify and agree upon specific agency roles in the riparian buffer program	12/31									
• Execute Memoranda of Agreements between participating agencies and the Department of Forestry		6/30								
• Promote private sector involvement										
• Begin coordinating with *American Forests*	10/31									
• Designate Department of Forestry and Soil and Water Conservation Districts as program field contacts	8/31									
• Develop a riparian forest buffer source book to be reviewed and updated annually	12/31									
• Initiate single progress tracking system	9/1									

OBJECTIVE/STRATEGY	1998	1999	2000	2001	2002	2004	2006	2008	2010	2011
• Develop spot-check tracking database										
• Department of Forestry to establish data base	12/31									
• Work Group agrees on process for using the data base to randomly select spot-check sites		6/30								
• Begin annual progress reports to the Secretary of Natural Resources		9/30								
• Establish a program to coordinate and support volunteer activities		6/30								
• Assess need for additional state staff		8/1								
ENHANCE INCENTIVES						On-Going				
• Implement enabling legislation authorizing tax breaks for riparian forest buffers lands in easements	7/1									
• Make local government revenue losses due to buffer land tax breaks eligible for reimbursement from Water Quality Improvement Fund grants	Done									
• Seek enabling legislation to exempt riparian forest buffers from estate taxes		6/30								
• Encourage localities to use stormwater utility fees for establishing riparian buffers						On-Going				
• Seek Conservation Reserve Enhancement Program funds from the U.S. Department of Agriculture	12/31									
• Consolidate and improve cost-share and grant programs		6/30 — and				On-Going				
• Encourage flexibility in local subdivision and zoning requirements						On-Going				
• Promote expansion of local government land-use management tools						On-Going				
• Seek increased funding for conservation easements through the Open Space Lands Preservation Trust Fund		6/30								

OBJECTIVE/STRATEGY	1998	1999	2000	2001	2002	2004	2006	2008	2010	2011
• Explore small business assistance programs as funding sources • Assess the availability of existing State small business assistance programs that may be applicable to this program			6/30							
• Establish appropriate recognition programs		6/30								
PROMOTE EDUCATION AND OUTREACH						On-Going				
• Initiate a major public relations campaign in concert with American Forests	12/31									
• Enlist private sector support	10/31									
• Coordinate with young people's education programs • Assess the adequacy of riparian buffer information in existing curricula		6/30								
• Promote activities of local watershed organizations						On-Going				
• Increase demonstration areas in each tributary						On-Going				
• Provide public information through real estate companies and local Chambers of Commerce						On-Going				
• Continue cross-training among participating state and federal agencies						On-Going				
• Link buffer restoration data with the Virginia Geographic Information Network		7/1 — and				On-Going				
TARGETING, TRACKING AND RESEARCH						On-Going				
• Target buffer restoration efforts where the greatest benefits can be achieved						On-Going				
• Establish a buffer tracking program						On-Going				
• Develop a system to inventory and track progress • Repeat the initial GIS inventory every five years	Done			6/30			6/30			6/30

OBJECTIVE/STRATEGY	1998	1999	2000	2001	2002	2004	2006	2008	2010	2011
• Support research, monitoring, and technology transfer						On-Going				
• The Work Group will establish a multi-disciplinary research team	12/31									
• The research team will intensify efforts to examine the costs and benefits of riparian buffers						On-Going				
• The research team will conduct a study on the effect of riparian forest buffers on real estate values			6/30							
• The research team will conduct a study to determine the average cost per pound of nutrients prevented by riparian buffers from entering waterways				6/30						
• The research team will pursue opportunities for research to refine our understanding of riparian forest buffer function and effectiveness in various physiographic settings						On-Going				

APPENDICES

Appendix A

Chesapeake Bay Program

CHESAPEAKE EXECUTIVE COUNCIL

DIRECTIVE NO. 94-1

RIPARIAN FOREST BUFFERS

The restoration of water quality and living resources are the principal goals of the 1987 Chesapeake Bay Agreement. To achieve these goals, we agreed to reduce nutrients in the main stem of Chesapeake Bay 40 percent by the year 2000 and to sustain this level thereafter. In 1992, we reaffirmed these goals and also recognized the importance of the tributaries to the Bay ecosystem. We thus began to develop tributary-specific nutrient reduction strategies to achieve water quality requirements necessary to restore living resources in the tributaries as well as the mainstem of the Chesapeake Bay. In 1993, we furthered our commitment to these living resources by agreeing to construct migratory fish passages and remove stream blockages in the tributaries to restore hundreds of miles of historic spawning areas. We now recognize that forests along waterways, also known as "riparian forests," are an important resource that protects water quality and provides habitat and food necessary to support fish survival and reproduction. Used as buffers, riparian forests provide a means of helping us achieve our restoration goals in the tributaries.

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BASED ON SCIENTIFIC RESEARCH INTO THE ENVIRONMENTAL BENEFITS OF RIPARIAN FOREST BUFFERS, WE HAVE FOUND THAT:

- Forests have the ability to absorb and denitrify nitrogen in surface and groundwater, and to trap phosphorus-laden sediment and other pollutants resulting from adjacent land uses, thereby protecting water quality.
- Riparian forests provide shade, organic matter, and often control stream bank stability, which in turn provide a range of living resource habitat benefits, including the moderation of stream temperature, support of the food web, protection of fish habitat, and sediment and erosion control.
- Riparian forest buffers deliver the greatest range of environmental benefits of any type of stream buffer.

THE ENVIRONMENTAL BENEFITS OF RIPARIAN FOREST BUFFERS AND THEIR POTENTIAL IN HELPING US MEET OUR NUTRIENT REDUCTION GOALS REPRESENT A UNIQUE OPPORTUNITY TO DEVELOP A COMPREHENSIVE BASINWIDE POLICY TO MAINTAIN AND RESTORE THIS VITAL RESOURCE. A POLICY IS TIMELY FOR THE FOLLOWING REASONS:

- Since much has been done by state and federal agencies, private landowners, and industry to improve water quality through the protection of riparian forests, it is now appropriate for the Chesapeake Executive Council to adopt a comprehensive policy addressing riparian forest buffers in the Chesapeake tributaries.
- Much of the inventory of riparian forests has been conducted or is underway, and as we learn more about the extent and condition of these forests, a policy is needed to guide management actions.

- ✧ The tributary strategies to date have identified riparian forest buffers as an important best management practice in controlling nutrient loading to streams.
- ✧ As we provide for migratory fish passage, it becomes even more important to ensure favorable water quality and habitat in those streams and rivers.
- ✧ Maintaining long-term caps on nutrients in the tributaries will require approaches that maintain ecosystem or watershed-scale functions, like those provided by healthy riparian forests.

~

THEREFORE, TO FURTHER OUR COMMITMENTS MADE IN THE 1987 CHESAPEAKE BAY AGREEMENT, WE WILL:

- ✧ Recognize the value of riparian areas in the Chesapeake Bay watershed and commit to develop a policy which will enhance the maintenance, restoration and stewardship of this valuable resource.
- ✧ Convene a panel or task force to recommend a Chesapeake Bay Program policy on riparian forest buffers. To ensure broad public input, the panel will conduct a series of workshops or roundtables involving landowners, federal, state and local governments, non-profit organizations, business, industry, scientists, and citizens.
- ✧ Request the panel to consider and make recommendations, where appropriate, for:
  - accepted definitions of forest buffers which address the ecologically beneficial characteristics and functions of riparian forests while accommodating resource management activities appropriate within the riparian zone;
  - a quantifiable goal or goals, measured in acres, stream miles or other appropriate terms, to serve as a long-term target for the maintenance and restoration of riparian forests, as well as a timetable for achieving this goal;
  - ways to strengthen communication and partnerships while recognizing the rights and responsibilities of federal, state and local governments, private landowners, and the public, so as to better coordinate policy and program actions regarding riparian forest buffers;
  - ways to support other stream protection efforts where landowners or land managers are unable to implement riparian forest buffers.
- ✧ Request the panel to submit an interim report to the Executive Council in 1995, outlining the major policy findings and any appropriate recommendations, and to submit final recommendations for a riparian forest buffer policy in 1996 for consideration by the Executive Council.

~

By this DIRECTIVE, we reaffirm our commitments made in the Chesapeake Bay Agreement to restore and protect the ecological integrity, productivity and beneficial uses of the Chesapeake Bay. In recognition of our commitments, we the undersigned agree to further our efforts through this directive which is hereby incorporated into the overall Chesapeake Bay Program.

DATE October 14, 1994

FOR THE COMMONWEALTH OF VIRGINIA George F. Allen

FOR THE STATE OF MARYLAND Parris Glendening

FOR THE COMMONWEALTH OF PENNSYLVANIA Robert P. Casey

FOR THE DISTRICT OF COLUMBIA Sharon Pratt Kelly

FOR THE UNITED STATES OF AMERICA Carol M. Browner

FOR THE CHESAPEAKE BAY COMMISSION Elmo G. Cross, Jr.

Chesapeake Bay Program

CHESAPEAKE EXECUTIVE COUNCIL

ADOPTION STATEMENT ON RIPARIAN FOREST BUFFERS

In past commitments, we agreed to reduce nutrients, to restore habitat, to improve access to thousands of miles of habitat for migratory fish, and to enhance watershed management by developing and implementing tributary-specific pollution reduction strategies. All of these are part of the effort to achieve our goals for improved water quality and living resources in the Chesapeake Bay. Building on these past commitments, we now highlight the role that conservation, restoration, and stewardship of our riparian areas, and in particular riparian forests, play in reaching our long-term goals for restoration of the Chesapeake Bay.

BASED ON RECOGNITION THAT RIPARIAN FOREST BUFFERS CAN PROVIDE A RANGE OF WATER QUALITY, LIVING RESOURCE, AND WATERSHED BENEFITS:

In October of 1994, the Chesapeake Executive Council adopted Directive 94-1 which called upon the Chesapeake Bay Program to develop a policy which would enhance riparian stewardship and efforts to conserve and restore riparian forest buffers.

- The Executive Council appointed and convened a 31-member Riparian Forest Buffer Panel composed of federal, state, and local government, scientists, land managers, and citizen, farming, development, forest industry, and environmental interests. The Panel represented a wide range of viewpoints and experience and conducted an extensive stakeholder involvement process.
- The Panel was guided by a commitment to develop goals based on sound science, to recommend flexible strategies, to focus on voluntary incentive-based approaches, to increase private and non-profit partnerships, to enhance, streamline, and coordinate existing government programs, to respect private property rights, to be responsive to landowner needs, and to ensure stakeholder involvement.
- The Panel has provided a set of overall goals, recommendations, suggested actions, and technical information that will help guide the conservation and restoration of riparian buffers in the watershed.

THEREFORE, TO SUPPORT AN INTEGRATED AND COMPREHENSIVE APPROACH TO THE CONSERVATION OF RIPARIAN AREAS, WE:

- Accept the report of the Riparian Forest Buffer Panel.
- Adopt the proposed definition of "riparian forest buffer".
- Adopt the following additional Chesapeake Bay Program goals for states and federal agencies:
  - *To assure, to the extent feasible, that all streams and shorelines will be protected by a forested or other riparian buffer.*
  - *To conserve existing forests along all streams and shorelines.*
  - *To increase the use of all riparian buffers and restore riparian forests on 2,010 miles of stream and shoreline in the watershed by 2010, targeting efforts where they will be of greatest value to water quality and living resources.*
- Adopt the five Policy recommendations of the Panel.
- Direct each state and the federal government to establish a riparian buffer implementation plan with conservation and restoration benchmarks addressing the Policy recommendations of the Panel by June 30, 1998.

Maintaining and restoring buffers along all streams and shorelines will not be an easily-achieved goal. Furthermore, reaching these goals will require engaging new partners, energizing the public to plant trees and restore streams, working with farmers, other landowners and local governments, building new relationships with industry and business, and continuing to develop new and innovative approaches and incentives.

By these actions, we reaffirm our commitments made in the Chesapeake Bay Agreement to restore and protect the ecological integrity, productivity and beneficial uses of the Chesapeake Bay. In recognition of our commitments, we the undersigned agree to further our efforts through the encouragement of voluntary effort to conserve and restore riparian forest buffers throughout the Chesapeake Bay watershed.

Date OCTOBER 10, 1996

CHESAPEAKE EXECUTIVE COUNCIL

FOR THE UNITED STATES OF AMERICA

FOR THE STATE OF MARYLAND

FOR THE COMMONWEALTH OF PENNSYLVANIA

FOR THE COMMONWEALTH OF VIRGINIA

FOR THE DISTRICT OF COLUMBIA

FOR THE CHESAPEAKE BAY COMMISSION

Final Report of the Riparian Forest Buffer Panel

INTRODUCTION

In October 1994, the Chesapeake Executive Council adopted Directive 94-1 which called upon the Chesapeake Bay Program to develop a set of goals and actions to increase the focus on riparian stewardship and enhance efforts to conserve and restore riparian forest buffers. The Council recognized that forests along waterways are an important resource that protects water quality and provides habitat and food necessary to support fish and wildlife survival and reproduction. The Council appointed a panel to recommend a set of policies, recommend an accepted definition of forest buffers, and suggest quantifiable goals. The Panel was a diverse group of thirty-one members, comprised of federal, state, and local government representatives, scientists, land managers, citizens, and farming, development, forest industry, and environmental interests. This report contains our principal findings and recommendations. Background material which describes in more detail the technical basis for the recommendations and elaborates on the implementation options is available as a Technical Support document.

The Panel adopted a set of principles to guide its deliberations. These principles formed the basis of the Panel's work and are reflected in its recommendations:

- *Develop goals based on sound science*
- *Recommend flexible strategies*
- *Focus on voluntary incentive-based approaches*
- *Increase private and non-profit partnerships*
- *Enhance, streamline, and coordinate existing government programs*
- *Be responsive to landowner needs and ensure stakeholder involvement*
- *Respect private property rights*

FINDINGS

Based on stakeholder input and an extensive review of the science, programs, experience, and opportunities related to riparian forest management, the Panel found that:

- Streams and rivers in the Chesapeake Bay watershed offer a great diversity of form and function. Changes in the landscape have altered many streams and shorelines from their natural condition. There are an estimated 111,000 miles of perennial and intermittent streams in the watershed. Small first and second order streams are often the most critical in terms of downstream water quality and living resources. As a result of aerial surveys, it is estimated that more than 50 percent of the Bay's waterways are bordered with 100 feet or more of forest on each side.

✦ A stream and its riparian area function as one. The condition of the riparian area helps determine the quality and integrity of stream channels and habitat available for fish and other wildlife. Riparian areas interact with the flow of surface and groundwater from upland areas and play an important role in water quality.

✦ A sound scientific foundation exists to support the nutrient reduction and ecological values and functions of riparian forest buffers and to promote their use as a management tool.

✦ Riparian forest buffers will contribute to accomplishing Chesapeake Bay Program goals for nutrient reduction (especially the year 2000 cap), tributary strategies, submerged aquatic vegetation restoration, fish passage, and habitat restoration.

✦ While many approaches to stream protection and riparian buffers exist, few have targeted the conservation and restoration of riparian forests.

✦ Landowners see riparian forest buffers as more permanent than other stream protection alternatives. They consequently need additional incentives and/or more inducement to establish this type of buffer on productive land that is generating or has significant potential to generate non-forest income.

✦ Existing programs are not adequately funded, integrated, or coordinated to effectively target riparian forest buffers and track accomplishments.

✦ Although streamside vegetation of any kind is desirable, forests provide the greatest number of benefits and highest potential for meeting both water quality and habitat restoration objectives. There are situations throughout the watershed where it will not be possible to provide forest buffers. In these instances, other buffers will provide some of the desired benefits.

LAND USE-SPECIFIC FINDINGS FROM STAKEHOLDER MEETINGS

The Panel also recognizes that existing land uses affect the approach to buffers. Related to these major land uses, the Panel found that:

✧ *On Agricultural land*

Riparian forest buffers are currently used as a management practice on some farm fields and pastures and as a component of some conservation management plans. With increased effort, the promotion of riparian forest buffers can become a part of routine farm conservation planning efforts. A discussion of standards for their use can be found in the Technical Support document to this report.

Site-specific conservation plans must incorporate landowner objectives and the range of practices necessary to achieve healthy and functional riparian systems. Restoration of degraded conditions and long-term success will depend on a flexible riparian system conservation approach that examines a farm in relation to its adjacent properties and the stream's relationship to its watershed. Implementing successful riparian system conservation includes 1) encouraging practical management measures that limit soil disturbance and reduce potential water quality impacts, 2) increasing shade, habitat, and food for fish and riparian-dependent wildlife, and 3) maintaining economic viability of farming operations.

Teams such as the USDA State Technical Committees can assist in targeting, coordinating, and tracking implementation of federal, state, and local programs for riparian forest buffers and riparian system conservation on agricultural land.

The Panel found that successful implementation of buffers on agricultural land will require 1) enhanced educational programs for landowners, 2) technical support and financial incentives aimed at agriculture, and 3) public recognition of the value and importance of farm land in this rapidly urbanizing watershed.

✧ *On Forested Land*

Riparian forest buffers in the context of forest management raise different issues than other land uses. Because the land is already forested, efforts are focused on retaining forest land and on techniques for its future management. On lands where forests are managed for silviculture, clearly accepted guidelines already exist for "streamside management zones" and are widely practiced on public lands, by industry, and by private landowners.

Forest management, which includes timber harvesting, is compatible with maintaining functioning riparian forest buffers. Deriving income from management of riparian forests should be integrated with a wider range of management objectives.

The success of a riparian forest buffer retention strategy relies in part on creating a favorable climate for continued forest land ownership. Actions which will contribute to this climate include: 1) education and voluntary participation by landowners and forestry professionals with riparian forest buffer criteria, 2) recognition by the public that managed forests are a beneficial land use for water quality and habitat, and 3) appropriate technical support and financial incentives for riparian forest retention and recommended management.

The Panel found that the work underway in the forest industry, especially the Sustainable Forestry Initiative, could and should serve as a model.

✧ *On Developed and Developing Lands*

Implementation of riparian forest buffers in developed areas is different from agricultural or forestry settings. First, the changes resulting from impervious cover of buildings, streets, and other infrastructure are permanent and typically result in cumulative changes in the hydrological regime. In contrast, the changes resulting from farming and forestry can be reversed. Secondly, the per-unit value of developed land is significantly greater than the per-unit value of farm or forest land.

A strategy to implement riparian forest buffers on developed lands must include a recognition of these unique considerations. For high-density urban environments, the focus should rely primarily on education, citizen involvement, and general awareness of the importance of natural systems and people's connection to them. Restoration should be promoted where feasible, and through local outreach with grassroots and civic organizations. Recommendations for urban and suburban alternatives to a riparian forest buffer must be developed for those areas where development has already precluded the maintenance or establishment of a forest buffer.

In developing areas, there is a greater opportunity to conserve environmental benefits. Maintaining structural, hydrological, and functional integrity of riparian systems is an essential objective of development planning and construction.

A key component to successful implementation of riparian forest buffers in developed and developing areas is to support existing federal, state, and county laws and local ordinances. In addition, local zoning and subdivision ordinances, comprehensive land use plans, regional or watershed-specific stormwater management plans, and riparian system conservation plans are appropriate mechanisms. Effective implementation of riparian forest buffers on developed and developing lands can result from a set of guidelines that ensure consistency and clarity, but remain flexible to site-specific needs. Specifically the Panel was impressed with approaches which: 1) allow flexibility for expansion, contraction, and averaging with respect to buffer width criteria so as to account for the 100-year flood plain, steepness of slope, adjacent wetlands, limited lot size, stormwater ponds, etc., 2) provide for flexible uses within the riparian forest buffer, including freedom to harvest timber for firewood or commercial use, consistent with state forestry harvesting guidelines, 3) promote riparian forest buffers as part of stormwater management planning, and allow pollution removal effectiveness of buffers to be credited in stormwater management plans and calculations, and 4) provide flexibility for development density compensation where forest buffers are required or proposed so that developers can establish the same number of lots on the parcel outside the riparian forest buffer as would be allowed without a riparian forest buffer.

These findings, which are supported by background information included in the Technical Support document, formed the basis for the recommendations which follow.

RECOMMENDATIONS

The Executive Council asked the Panel to consider and make recommendations, where appropriate, for 1) accepted definitions of forest buffers which address ecologically beneficial characteristics and functions of riparian forests while accommodating resource management activities appropriate within the riparian zone, 2) a quantifiable goal or goals to serve as a long-term target for the maintenance and restoration of riparian forests, as well as a timetable, 3) ways to strengthen communication and partnerships to better coordinate policy and program actions, and 4) ways to support other stream protection efforts.

DEFINITION

Clarity of definition is important, perhaps more so than consistency from one jurisdiction to the next. The Panel recommends that the Executive Council adopt the following definition of riparian forest buffers, to be applied throughout the Bay watershed:

> *Riparian Forest Buffer: An area of trees, usually accompanied by shrubs and other vegetation, that is adjacent to a body of water which is managed to maintain the integrity of stream channels and shorelines, to reduce the impact of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals, and to supply food, cover, and thermal protection to fish and other wildlife.*

Width is an important consideration in the overall effectiveness of forest buffers. The appropriate width of the forested buffer will vary depending on site conditions, topography, adjacent land use, and the benefits one is trying to gain by installing a buffer. Technical guidance on buffer width can be found in the Technical Support document as well as various other sources.

GOALS

The Panel recommends that the Council adopt one long-term and two immediate goals:

- ✦ ***Assure that every stream in the watershed is protected by a riparian forest or other buffer.***
- ✦ ***Conserve existing forests along streams and shorelines.***
- ✦ ***Increase basin-wide riparian forest buffers through restoration benchmarks to be established by each signatory in 1998 with the aim of accelerating the present rate of reforestation in the riparian area. Priorities should be focused on those areas that will provide the greatest benefit.***

POLICIES

Maintaining existing buffers along all streams and shorelines will not be an easily-achieved goal. Restoring forest buffers in areas where they are most needed will also be difficult. However, the present level of effort is inadequate, and the Executive Council is urged to enable the realization of these goals by making adequate staff resources, technical assistance, tax relief, financial incentives, and education programs available.

The Panel believes that adoption of five policy recommendations will help enable the signatories to establish and develop implementation strategies. These five recommendations address the remainder of the Panel's charge.

✦ Recommendation 1: Enhance Program Coordination and Accountability

> *"Establish mechanisms to streamline, enhance, and coordinate existing programs related to buffers and riparian system conservation."*

Suggested actions include:

✧ Establish coordinating teams to address how riparian forest buffer retention and restoration goals are being achieved. These teams should report annually to the Chesapeake Bay Program Implementation Committee.

✧ Use federal, state, or other sources of funding to establish personnel in each jurisdiction capable of specializing in landowner outreach and education and local program assistance for riparian forest buffer design, establishment, management, and education.

✧ Encourage public land managers to review current practices and policies (e.g. mowing, wildlife management, encroachment, disturbance, and practices on leased land) and to develop plans and goals for riparian system and riparian forest buffer protection and restoration.

✧ Evaluate and modify existing federal and state cost-share and assistance programs to simplify the process, streamline implementation, and ensure that they support a wide range of riparian system conservation practices, including planting trees and shrubs, maintenance of plantings until successfully established, use of temporary fencing, and development of off-stream water sources.

✦ Recommendation 2: Promote Private Sector Involvement

> *"Build partnerships with the private sector to help support the promotion and implementation of riparian forest buffer retention and restoration activities."*

Suggested actions include:

✧ Establish a recognition program in each state to reward and recognize developers, farmers, and forest landowners for riparian forest buffer accomplishments and proper riparian system conservation.

✧ Establish demonstration projects which enlist industrial/corporate landowners to establish riparian forest buffer restoration/retention on their lands.

✧ Convene a workshop to explore ways to facilitate and encourage land trusts to increase the conservation of riparian forests and riparian systems, to include provisions in existing easement agreements for riparian forest buffer establishment and stream enhancement activities, and to track lands protected by permanent easements.

✧ Improve the ability of non-governmental partners such as private, nonprofit, and watershed organizations to assist in landowner outreach, education, and buffer restoration efforts by establishing grants through public/private endowments supported by multiple funding sources. Ensure an adequate and inexpensive supply of native riparian planting materials.

✧ Continuously work to involve citizen groups and volunteers in riparian forest buffer planting and management efforts in rural and urban areas and build a cadre of private individuals who can assist government agencies to design, organize, and implement stream improvement and riparian restoration projects.

✦ Recommendation 3: Enhance Incentives

> *"Develop and promote an adequate array of incentives for landowners and developers to encourage voluntary riparian buffer retention and restoration".*

Suggested actions include:

✧ Compile a list of existing federal and state tax advantages, tax relief provisions, conservation easement tax benefits, tree planting credits, and other tax options that currently exist and market these tools to landowners.

✧ Deliver to Congress an Executive Council proposal to amend inheritance tax law and provisions that unintentionally result in conversion of forests and agricultural land to other land uses, making opportunities for riparian forest retention difficult.

✧ Create flexible state income tax incentives (such as tax credits for tree planting, retention, or easement expenses in buffers) to promote riparian forest buffers.

✧ Enable, encourage, and, where necessary, amend legislation to ensure that local governments have the authority to promote preferential property tax strategies.

✧ Implement, within existing state land trust or conservation easement programs, mechanisms which emphasize riparian forest buffers and riparian systems.

✧ Develop strategies and tools to promote local implementation of flexible land development practices which enhance riparian forest buffer retention, such as density compensations, pollution removal credits for riparian forests in stormwater management plans and calculations, more flexible use of buffer resources, and off-site mitigation or buffer trading within existing regulatory programs.

✧ Encourage agencies to evaluate their regulatory and conservation programs and develop approaches that will not penalize landowners who restore buffers.

✦ Recommendation 4: Support Research, Monitoring, and Technology Transfer

> *"Increase the level of scientific and technical knowledge of the function and management of riparian forest and other buffers, as well as their economic, social, ecological, and water quality values."*

Suggested actions include:

✧ Update state and federal technical assistance handbooks, manuals, and specifications and provide a field handbook providing guidance on the benefits, functions, design, establishment, and management of riparian forest buffers.

✧ Develop a research agenda that addresses information needs regarding riparian forest buffers, such as landowner concerns, economic analysis of costs and benefits, and ecological and physical relationships.

✧ Conduct an analysis of riparian forest and other buffer effectiveness and targeting for nutrient removal and living resource habitat enhancement.

✧ Commit to repeating the inventory of riparian forests in the Chesapeake Bay watershed at periodic intervals, continually refining the technological capabilities and resolution of the inventory, in order to accurately measure progress and program accomplishments against the baseline findings of the inventory completed in 1996.

✦ Recommendation 5: Promote Education and Information

> *"Encourage Bay signatories to implement education and outreach programs about the benefits of riparian forest buffers and other stream protection measures."*

Suggested actions include:

✧ Publish state directories for riparian forest buffer and stream protection and restoration assistance programs for use by landowners, citizens, and local governments.

✧ Coordinate the development of educational materials and tools (such as public service announcements, videos, posters, fact sheets, displays, brochures, field tours, Internet homepage, etc.) and implement a basin-wide public outreach and education program about the benefits of healthy streams and riparian areas.

✧ Initiate ongoing training and education programs as appropriate for developers, loggers, the forest industry, consultants, and citizen groups as well as other resource professionals and decision-makers to communicate the importance of riparian forest buffer and riparian system conservation, methods of protection and establishment, and the use of watershed and stream assessments.

✧ Ensure coordination among agencies providing landowner assistance to develop and implement a strategy for enhanced outreach, technical assistance, and education related to stream restoration and riparian forest buffers on private and public lands.

✧ Establish and publicize riparian forest buffer and riparian system conservation demonstration sites in each jurisdiction which are representative of all physiographic regions and land uses.

CONCLUSION

The environmental benefits of riparian forest buffers presents the Executive Council with a unique opportunity to develop a Bay-wide policy that will help in meeting the Bay Program's goals to reduce nutrients and restore habitat for living resources. The Panel urges the Executive Council to adopt these recommendations and will call upon their respective staffs to implement a comprehensive riparian system conservation policy which includes forest buffers as an important component. Revisiting the goals of the policy, evaluating programs, and redirecting actions as necessary will be important as the Chesapeake Bay Program monitors progress in adding forest buffers and improving riparian system conservation. The adoption and implementation of a riparian system conservation policy will assure that the huge effort mounted by the Executive Council over the past decade continues to advance, while simultaneously respecting the partnerships that have been forged, the legal responsibilities of the various levels of government, and the evolving knowledge base which forms the foundation of this work.

Appendix B

APPENDIX B

Specifications for Riparian Forest Buffer Establishment

This section will detail the specific restoration criteria necessary for the Commonwealth to count a project as a viable riparian forest buffer or other buffer. *All riparian buffers established beginning January 1, 1996 will be tabulated but only those meeting the following criteria will count towards Virginia's goal of 610 miles of riparian forest buffer and ultimately the entire Bay goal of 2010 miles by the year 2010.*

The following specifications constitute a "countable" riparian forest buffer:

- All intermittent and perennial channels excluding man-made ditches
- All riparian forest buffers must be at least 35 feet on one side of the watercourse or meet the Natural Resources Conservation Service (NRCS) standard for that site. For both sides to be counted as buffered, then the total width must be at least 70 feet or meet the NRCS standard.
- Riparian forest buffer averaging is allowable as long as the stream does not meander outside the buffer zone.
- If the riparian forest buffer is established by planting, a minimum of two (2) species must be utilized, either two types of trees or one tree and one shrub.
- Plantings should ideally be *native, non-invasive woody trees and shrubs.* However, species such as certain hybrid poplars that have economic appeal, which grow quickly and can be harvested consistent with conservation guidelines, may be grown as well.
- Natural regeneration is acceptable. However, in cattle pasturing situations conservation measures such as alternative watering facilities, alternative sources of shade, and fencing are strongly encouraged to keep the livestock from degrading buffer areas and diminishing their effectiveness.
- If a substandard buffer width is present, enhancement through planting or natural regeneration is allowed and encouraged.

Appendix C shows Virginia's Riparian Buffer Inventory Form. Riparian forest buffer restoration will be counted twice a year and tabulated to track progress toward the 610 mile goal.

Appendix C

COMMONWEALTH OF VIRGINIA

RIPARIAN BUFFER INVENTORY FORM

PLEASE RETURN TO:

Mike Foreman

Virginia Department of Forestry

P.O. Box 3758

Charlottesville, VA 22903-0758

Phone (804) 977-6555 • FAX: (804) 296-2369

E-mail: foremanm@hq.forestry.state.va.us

http://www.state.va.us/~dof/dof.htm

Property Owner (optional but desired)

First Name: _____ *Last Name:* _____

Address: _____

City: _____ *State:* _____ *Zip:* _____

PLANTING LOCATION:

County: _____ *Nearest City/Town:* _____

*Complete **at least one** of the following two geo-referencing methods:*

Farm # _____ *Tract #* _____ *Field #* _____

Longitude: _____ *Latitude:* _____ *UTM:* _____

Watershed Name/HUP #: _____

Waterbody/Stream Name: _____

MANAGEMENT/ASSISTANCE:

Lead Agency(s) or Group(s) Providing Technical Assistance: _____

Primary Program for Financial Assistance (if applicable): _____

Planting by: Volunteers (#) _____ *Contractor* _____ *Other* _____

If planting done by volunteers, please give group name: _____

BUFFER INFORMATION:

Any prior existing buffer? ❑ *Yes* ❑ *No*

Buffer length: _____ *(ft)* *Buffer Area:* _____ *(acres)* *Avg. Width:* _____ *(ft)*

Method of Buffer Establishment:

Natural Regeneration ❑ *Planted* ❑ *Fencing* ❑

Buffer Species Composition of Planted:

Primary Overstory Species (list 1-3): _____/ _____/ _____/

Primary Understory Species (list 1-3): _____/ _____/ _____/

Planting Stock Size: # Seedlings _____ *# Container* _____ *#B&B* _____

Date of Buffer Establishment (mm/dd/yyyy): _____

Adjacent Land Use (check predominant use): _____

Residential ❑ *Commercial* ❑ *Industrial* ❑ *Pasture* ❑

Recreational ❑ *Crop* ❑ *Idle Land* ❑ *Other (specify)* ❑

Status of Opposite Streambank

Adequately Buffered with Trees (35' minimum width?) *Yes* ❑ *No* ❑

Form Completed By: _____ ***Phone:*** _____ ***Date:*** _____

Comments _____

Submission Deadlines: ***FALL PLANTING - JANUARY 1 • SPRING PLANTING - JULY 1***

RIPARIAN FOREST BUFFER FORM DIRECTIONS

GENERAL GUIDELINES

- *Riparian Forest Buffer (minimum standards)* — at least 35' wide on one side of the watercourse. NRCS provides guidance on conservation buffer widths in accordance with their technical standards. Buffer averaging is allowable as long as the stream does not meander outside the buffer zone. If the buffer is established by planting native, non-invasive woody trees then shrubs are strongly recommended using a minimum of two species for the planting design (either two trees, two shrubs, or one of each.) Natural regeneration is acceptable if the site is suitable, a seed source is available and heavy site preparation is not needed.
- If a *substandard width buffer* is present, enhancement through planting or natural regeneration to bring buffer up to at least minimum standard is permissible.
- *Deadlines for submitting this form* are January 1 for fall planting and July 1 for spring planting.
- *Return form* by mail to the address at the top of the other side of this form, or by fax or via the internet.

PROPERTY OWNER:

- This is the mailing address of the property owner, NOT the site address. This is optional but desired.

BUFFER PLANTING LOCATION

- Please complete the county name and the name of the nearest city or town.
- Complete the name of the waterbody or stream — e.g. Town Creek.

MANAGEMENT/ASSISTANCE

- Enter the name of the agency(s) and or group(s) providing technical assistance (ex.- planting plan preparation, planting coordination): this will generally be a local, state or federal agency (e.g. Virginia Department of Forestry, US Forest Service, NRCS, etc.)
- Enter the name of the primary financial assistance program, if applicable (e.g. Conservation Reserve Program (CRP), Stewardship Incentive Program (SIP).
- Planting by: who actually planted the trees — volunteer, contractor or other. If volunteers, report number of volunteers and the name of the volunteer group (if applicable.)

BUFFER INFORMATION

- Report the length (feet), area (acres) and average width (feet) of the buffer planting. Include any pre-existing width for buffers being enhanced.
- *List the dominant overstory and understory species*[1] planted. List up to three species each. Write out the names of the species or use the following codes:

BC-Bald Cypress	BW-Black Walnut	LP-Loblolly Pine	RM-Red Maple	SP-Scotch Pine	WP-White Pine
BG-Black Gum	CA-Crab Apple	NS-Norway Spruce	RO-Red Oak	SY-Sycamore	YP-Yellow Poplar
BL-Black Locust	DW-Dogwood	PO-Pin Oak	SG-Sweet Gum	WA-White Ash	WM-Wax Myrtle
BP-Bicolor Lespedeza	GA-Green Ash	RB-Redbud	SM-Silver Maple	WO-White Oak	Ruby Red Osier Dogwood
Hollys					

- *Method of Buffer Establishment:* was it planted, was it allowed, to regenerate naturally, and was fencing used for either method. Check all that apply. Invasive species should be controlled.
- *Planting Stock Size:* Report the approximate numbers of each size (seedling, container, ball, burlap.)
- *Date of Buffer Establishment:* Report the date the buffer was planted or protected.
- *Adjacent Land Use:* Check the appropriate block for the predominant land use of adjacent land.
- *Status of Opposite Streambank:* Check "yes" or "no" if a buffer of 35' or more exists.

FORM COMPLETED BY AND DATE:

- Print the name of the person completing this form and the date on which it was completed.

[1] DCR- Division of Natural Heritage. *Native Plants for Conservation, Restoration, and Landscaping- Riparian Forest Buffers. 1997*

Appendix D

ENROLLED

VIRGINIA ACTS OF ASSEMBLY — CHAPTER

An Act to amend and reenact § 58.1-3230 of the Code of Virginia and to amend the Code of Virginia by adding in Article 5 of Chapter 36 a section numbered 58.1-3665, relating to taxation of wetlands and riparian buffers; exemptions from tax.

[H 1419]

Approved

Be it enacted by the General Assembly of Virginia:

1. That § 58.1-3230 of the Code of Virginia is amended and reenacted and that the Code of Virginia is amended by adding in Article 5 of Chapter 36 a section numbered 58.1-3665 as follows:

§ 58.1-3230. Special classifications of real estate established and defined.

For the purposes of this article the following special classifications of real estate are established and defined:

"Real estate devoted to agricultural use" shall mean real estate devoted to the bona fide production for sale of plants and animals useful to man under uniform standards prescribed by the Commissioner of Agriculture and Consumer Services in accordance with the Administrative Process Act (§ 9-6.14:1 et seq.), or devoted to and meeting the requirements and qualifications for payments or other compensation pursuant to a soil conservation program under an agreement with an agency of the federal government. Real estate upon which recreational activities are conducted for a profit or otherwise, shall be considered real estate devoted to agricultural use as long as the recreational activities conducted on such real estate do not change the character of the real estate so that it does not meet the uniform standards prescribed by the Commissioner.

"Real estate devoted to horticultural use" shall mean real estate devoted to the bona fide production for sale of fruits of all kinds, including grapes, nuts, and berries; vegetables; nursery and floral products under uniform standards prescribed by the Commissioner of Agriculture and Consumer Services in accordance with the Administrative Process Act (§ 9-6.14:1 et seq.); or real estate devoted to and meeting the requirements and qualifications for payments or other compensation pursuant to a soil conservation program under an agreement with an agency of the federal government. Real estate upon which recreational activities are conducted for profit or otherwise, shall be considered real estate devoted to horticultural use as long as the recreational activities conducted on such real estate do not change the character of the real estate so that it does not meet the uniform standards prescribed by the Commissioner.

"Real estate devoted to forest use" shall mean land including the standing timber and trees thereon, devoted to tree growth in such quantity and so spaced and maintained as to constitute a forest area under standards prescribed by the State Forester pursuant to the authority set out in § 58.1-3240 and in accordance with the Administrative Process Act (§ 9-6.14:1 et seq.). Real estate upon which recreational activities are conducted for profit, or otherwise, shall still be considered real estate devoted to forest use as long as the recreational activities conducted on such real estate do not change the character of the real estate so that it no longer constitutes a forest area under standards prescribed by the State Forester pursuant to the authority set out in § 58.1-3240.

"Real estate devoted to open-space use" shall mean real estate used as ~~to be provided~~, or preserved for, *(i)* park or recreational purposes, *(ii)* conservation of land or other natural resources, *(iii)* floodways, *(iv) wetlands as defined in § 58.1-3665, (v) riparian buffers as defined in § 58.1-3665, (vi)* historic or scenic purposes, or *(vii)* assisting in the shaping of the character, direction, and timing of community development or for the public interest and consistent with the local land-use plan under uniform standards prescribed by the Director of the Department of Conservation and Recreation pursuant to the authority set out in § 58.1-3240, and in accordance with the Administrative Process Act (§ 9-6.14:1 et seq.) and the local ordinance.

§ 58.1-3665. Wetlands and riparian buffers.

Wetlands, as defined herein, that are subject to a perpetual easement permitting inundation by water, and riparian buffers, as defined herein, that are subject to a perpetual easement permitting

inundation by water, are hereby declared to be a separate class of property and shall constitute a classification for local taxation separate from other classifications of real property. The governing body of any county, city or town may, by ordinance, exempt or partially exempt such property from local taxation.

"Riparian buffer" means an area of trees, shrubs or other vegetation, subject to a perpetual easement permitting inundation by water, that is (i) at least thirty-five feet in width, (ii) adjacent to a body of water, and (iii) managed to maintain the integrity of stream channels and shorelines and reduce the effects of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals.

"Wetlands" means an area that is inundated or saturated by surface or ground water at a frequency or duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, and that is subject to a perpetual easement permitting inundation by water.

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